Internal Constrained Paths and Zones

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What are internal constrained paths?

- In the past, most major transmission limits were at the boundaries between control areas.
- Congestion was easily managed by adjusting schedules across the control area boundaries.
- An internal constrained path is a transmission path with limited capability that is inside a network, not on the boundary between two control areas.

Causes of Internal Constraints.

- Load Growth.
- New Generating Resources.
- Changes in Resource Dispatch. This is now often driven by market dynamics.
- More stringent planning requirements.

Why are internal constrained paths important?

- Load growth and market dynamics are placing increased demands on the transmission system.
- FERC Order 889 requires transmission providers to post ATC on paths where service has been denied or curtailed.
- Comparability requires that the parties contributing to congestion share in curtailments. Trying to relieve congestion by reflecting all curtailments back to control area boundaries may not cover all parties who should participate or allocate the curtailment appropriately.

What is a zone?

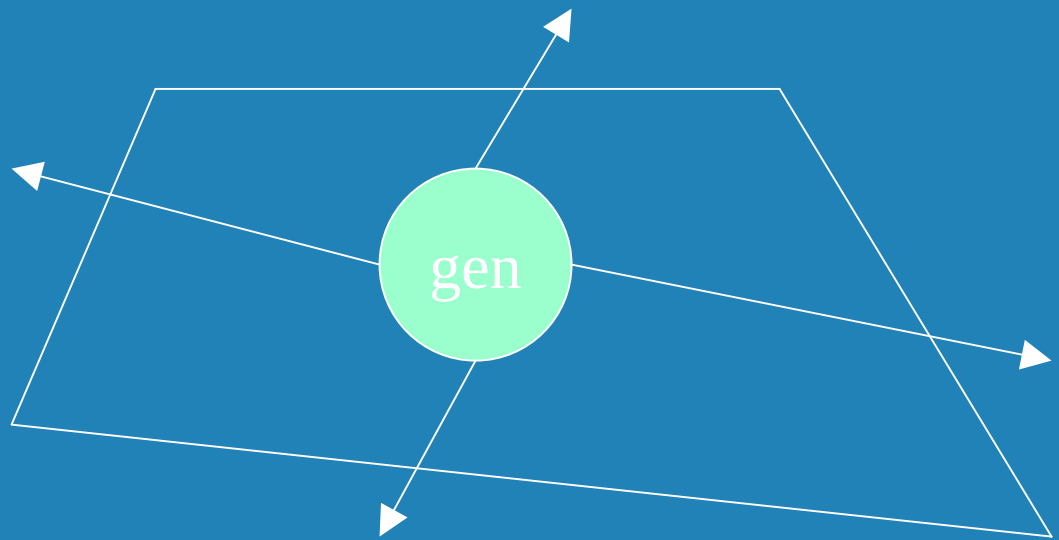
- A zone is simply a portion of the transmission system bounded by constrained paths. The zones are defined by the constrained paths.
- The boundary between two control areas can also form part of the boundary of a zone.
- For example, the West of Garrison path is both a constrained path and a control area boundary between MPC, BPA, and Avista.

Key issues in managing internal constrained paths and zones.

- Internal constrained paths can be comprised of facilities of more than one transmission owner. The path capacity must be allocated between the owners for ATC calculation and curtailment purposes.
- A party may have load and/or generation on both sides of an internal constrained path. How should this party's usage of the path be determined?
- Internal constrained paths will probably not be on control area boundaries. Major implications for scheduling.

How much of each path does a load or resource in a zone use?

- Since a zone is not a control area, some kind of powerflow analysis will be required. Flows across the constrained paths will be governed by the system topology.

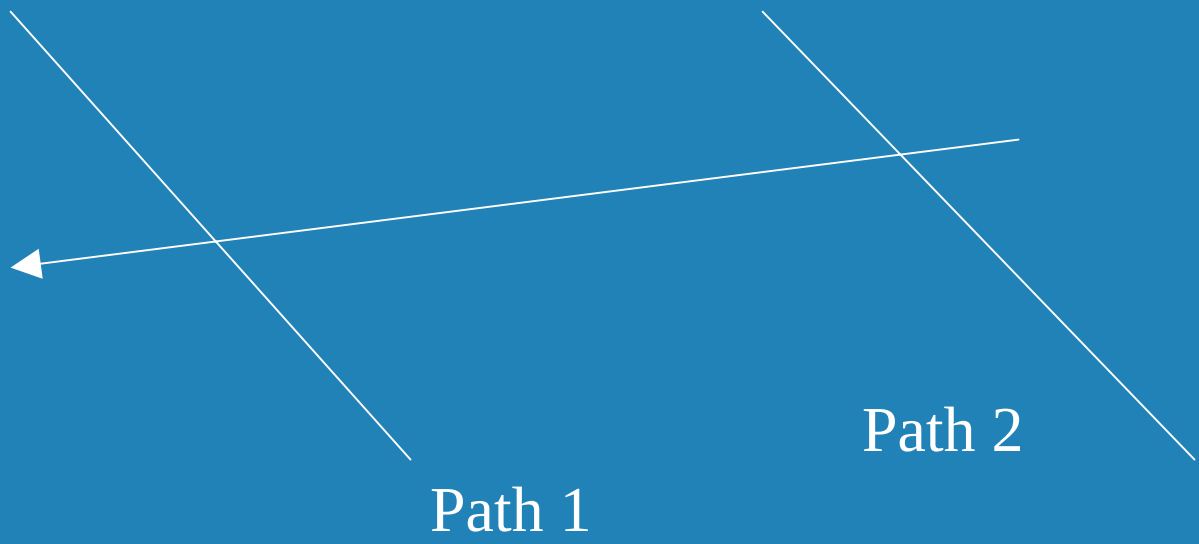


How much of each path does a load or resource in a zone use?

- Accurate computation of the flows on the system is critical for determining correct system usage, ATC, and curtailments.

A transaction may have to cross multiple constrained paths.

- The transaction could be subject to ATC and curtailment issues over each path.



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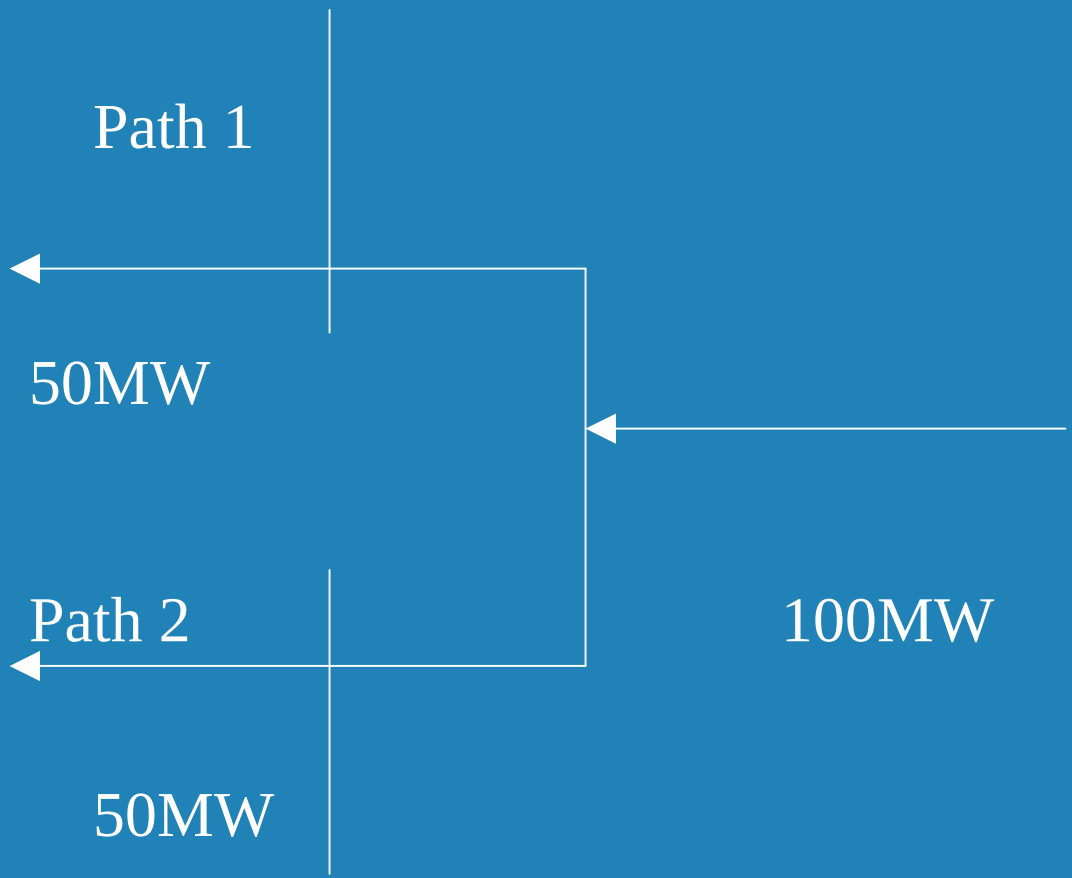

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- Example: Consider a transaction that flows 50%/50% on two paths.

  If Path 1 needs to be curtailed by 20MW, the transaction will have to be cut by 40MW to get the necessary relief.

Currently Posted Internal Constrained Paths

- BPA currently posts ATC for our external interties (AC, DC, Northern, West of Garrison, Reno-Alturas, LaGrande) and for several internal paths.
- These internal paths are:

  West of Hatwai

  North of John Day

  West of McNary

  Cross-Mountain North

Currently Posted Internal Constrained Paths

- For most of the currently posted paths, long-term pending requests exceed available ATC:

  West of Hatwai 3000MW pending

  West of McNary approx 2000MW pending

  North of John Day up to 5860MW pending

  Cross-Mountain North 650MW pending

- ATC may be available in the short-term firm market and non-firm should be available much of the time.

Other Potential Constrained Paths.

- In addition to the currently posted paths, other internal paths may have to be posted in the near future due to the addition of new resources or load growth:
  - I-5 Corridor between Canadian border and Portland (several possible constraints).
  - Cross-Mountain South.

Tools for Managing Internal Constrained Paths.

- BPA is currently developing new automation tools that will enable us to compute and track ATC over these internal paths, and to properly handle curtailments.
- The tools will incorporate powerflow analysis capabilities.
- BPAT plans to include a scenario analyzer as part of the automation package to enable customers to perform “what if” scenarios prior to submitting actual transmission requests.

Tools for Managing Internal Constrained Paths.

- The new automation tools will be brought on-line in phases over the next 8 to 12 months.
- The tools will be able to handle computations based on both contract demands and schedules.
- Time frames from next hour out to 10 or more years will be covered.